Claims

[c1] 1. A blade retention system for a rotating machine comprising:
a hub having a plurality of shaped, generally axially extending, radially open slots at circumferentially spaced positions about the hub;
a blade having complimentary shaped base portion axially received in a said slot and extending radially outwardly therefrom; and
a radial retainer for spacing a radially inner end of said blade from a bottom surface of said slot, said retainer including a main body and a resilient component for resiliently urging the blade radially outwardly of said slot.

[c2] 2. A blade retention system as in claim 1, wherein said main body includes a frame portion and a base portion, said resilient component being coupled to and extending from said base portion.

[c3] 3. A blade retention system as in claim 2, wherein said frame portion defines at least one opening for the passage of cooling air through said opening and into a cooling passage defined radially of the turbine blade.

[c4] 4. A blade retention system as in claim 3, wherein said frame comprises a wire perimeter band secured at each end to said base portion and defining an elongated open frame.

[c5] 5. A blade retention system as in claim 1, wherein said resilient component is formed as a resilient sheet metal strip.

[c6] 6. A blade retention system as in claim 2, wherein said resilient component is formed as a resilient sheet metal strip.

[c7] 7. A blade retention system as in claim 5, wherein said resilient sheet metal strip is coupled at a proximal end thereof to said main body and terminates at a free distal end, said resilient sheet metal strip having a pre-formed configuration to extend from a first plane including said main body to a second plane including said free distal end thereof, said second plane being spaced from and generally parallel to said first plane.

[c8] 8. A blade retention system as in claim 7, wherein said metal strip is resilient so

as to have a first, rest position wherein said distal end is spaced from said first plane of said main body by a first distance and a second, installed position wherein said distal end is spaced from said first plane by a second distance, said second distance being less than said first distance.

[c9] 9. A blade retention system as in claim 1, wherein said radial retainer is disposed between said radially inner end of said blade and the bottom surface of said slot, and the resilient component is compressed to a radial height less than a radial height when disengaged from the turbine blade and slot.

[c10] 10. A radial retainer for spacing a radially inner end of a turbine blade from a bottom surface of a respective slot, comprising:
a generally planer main body including a base portion and a frame portion; and
a resilient component, said resilient component being coupled to and extending from said base portion.

[c11] 11. A radial retainer as in claim 10, wherein said frame portion defines at least one opening for the passage of cooling air into a cooling passage of the turbine blade.

[c12] 12. A radial retainer as in claim 11, wherein said frame comprises a wire perimeter band secured at each end to said base portion and defining an elongated open frame.

[c13] 13. A radial retainer as in claim 10, wherein said resilient component is formed as a resilient sheet metal strip.

[c14] 14. A radial retainer as in claim 13, wherein said resilient sheet metal strip is coupled at a proximal end thereof to said base portion and terminates at a free distal end, said resilient sheet metal strip having a pre-formed configuration to extend from a first plane including said planer main body to a second plane including said second, free end thereof, said second plane being spaced from and generally parallel to said first plane, and wherein said metal strip is resilient so as to have a first, rest position wherein said distal end is spaced from said first plane of said main body by a first distance and a second, installed position wherein said distal end is spaced from said first plane by a second distance,

said second distance being less than said first distance.

[c15] 15. A radial retainer as in claim 10, wherein said resilient component is coupled at a proximal end thereof to said base portion and terminates at a free distal end, said resilient sheet metal strip having a pre-formed configuration to extend from a first plane including said planer main body to a second plane including said second, free end thereof, said second plane being spaced from and generally parallel to said first plane and wherein said resilient component is resilient so as to have a first, rest position wherein said distal end is spaced from said first plane of said main body by a first distance and a second, installed position wherein said distal end is spaced from said first plane by a second distance, said second distance being less than said first distance..

[c16] 16. A method of radially retaining a turbine blade in a turbine blade slot, comprising:
providing a hub having a plurality of shaped, generally axially extending, radially open slots at circumferentially spaced positions about the hub;
engaging a blade having complimentary shaped base portion with a said slot so that said base of said blade is axially slidably disposed in said slot and said blade extends radially outwardly therefrom; and
inserting a radial retainer between a radially inner end of said blade and a bottom surface of said slot, said radial retainer including a main body and a resilient component for resiliently urging the blade radially outwardly of said slot.

[c17] 17. A method as in claim 16, wherein said radial retainer main body includes a frame portion and a base portion, said resilient component being coupled to and extending from said base portion.

[c18] 18. A method as in claim 17, wherein said frame portion defines at least one opening for the passage of cooling air into a cooling passage defined radially of the turbine blade.

[c19] 19. A method as in claim 18, wherein said resilient component is formed as a resilient sheet metal strip, and further comprising guiding cooling flow into said

cooling passage with said resilient component.

[c20] 20. A method as in claim 16, wherein said resilient component is formed as a resilient sheet metal strip.

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